Annual Report of the Board of Public Health Works, Province of Bombay

For the Year 1938-39

BOMBAY
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1940

ANNUAL REPORT OF THE BOARD OF PUBLIC HEALTH WORKS, PROVINCE OF BOMBAY.

For the year ending 31st March 1939.

The Public Health Branch was re-organized on the 1st April 1933 and became purely consultant. In consequence, the functions, powers and constitution of the Board of Public Health Works in the Presidency were also reviewed.

2. The official and non-official membership of the Board was organised as under:—

(1) The Commissioner, Central Division.	PRESIDENT.
(2) The Secretary to Government, General Department.	MEMBERS.
(3) The Chief Engineer and Secretary to Government, Public Works Department.	
(4) The Director of Public Health for the Government of Bombay.	
(5) The Consulting Surveyor to Government.	
(6) and (7) Two non-officials.	
(8) The Consulting Public Health Engineer to Government.	MEMBER AND SECRETARY.

The personnel of the Board is given in Appendix I.

3. The functions and powers of the Board stand as under:—

Functions.

(1) The Board is to advise Government on all general questions of sanitary policy including the formulation of the principles to be followed for the healthy and orderly growth of inhabited

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areas and the preparation and submission to Government of Public Health Engineering type designs. The Board will also be consulted by Government regarding large individual schemes of sanitary improvements.

(2) The Board is to report to Government upon such matters as may be referred to it by Government for opinion, but is free to represent to Government any matter which it recognises as of importance.

(3) The Board is to consider measures for effecting improvements in sanitation in the Province and to give help and advice to local bodies on public health matters.

(4) The Board is to scrutinise public health improvement schemes from all aspects including finance with a view to recommending execution by the local body concerned with or without help from Government.

4. *Powers of the Board.*

The Board is empowered to accord—

(1) Approval to the preliminary investigations of Sanitary schemes up to any amount.

(2) Approval to the preparation of detailed plans and estimates.

(3) Administrative approval to works costing not more than Rs. 50,000 in the case of projects which are proposed to be executed by the local body through the agency of the Government Public Works Department.

In the case of works proposed to be executed by the local body through its own agency, the Board shall be competent to give administrative approval without limit.

(4) Preliminary approval to sanitary schemes to be carried out from provincial revenues up to any amount.

(5) Sanction to non-recurring grants up to Rs. 10,000 in each case from such sums as may be placed at the disposal of the board by Government, for minor sanitary schemes from time to time.

All cases which are administratively approved by the Board are to be reported to Government with a brief description of the works and intimation concerning the agency which the local body proposes to employ to execute the work.

The Board discharges its functions at meetings held at intervals, any specially urgent questions being dealt with by circulation. The Board's executive functions are carried out by the Consulting Public Health Engineer to Government.

5. The duties of the Consulting Public Health Engineer are to examine the schemes technically, to investigate the details on site, to inspect works under execution and to advise local bodies in respect of their sanitary schemes. All public health schemes carried out from loan funds are scrutinised by the Consulting Public Health Engineer for the Board in respect of their technical details, and the schemes are administratively approved or recommended to Government for approval by the Board before construction is undertaken.

An application for raising a loan either from Government or in the open market in connection with a Public Health Scheme is entertained only after the scheme has been approved administratively and sanctioned technically by the competent authority concerned.

Note.—Schemes costing not more than Rs. 50,000 can be approved administratively by the Board of Public Health Works and sanctioned technically by the Consulting Public Health Engineer to Government. Those costing more than Rs. 50,000 require the administrative approval and the technical sanction of Government.

Public Health works financed from loans taken by local bodies are, if executed by their own qualified agency, subject to control and inspection by the Consulting Public Health Engineer to Government according to rules framed under the Local Authorities Loans Act. But where the local body does not either possess the requisite staff, or employ a qualified agency capable of carrying out the work on approved lines, it is open to Government to impose a condition that the work should be carried out by the agency of the Public Works Department.

6. The Public Health Engineering Branch was again re-organized from 1st December 1938. The Poona Water Works Division and the Government Central Store and Workshops were converted into sub-divisions and brought under the administrative control of one executive head "The Consulting Public Health Engineer to Government".

The Sub-Divisional Officer, Poona Water Works Sub-Division, has now charge of—

(1) The Poona Water Works Pumping Station.

(2) The Holkar's Bridge Pumping Station.

(3) Pashan dam and filters.

(4) Kirkee Water Works.

The Sub-Divisional Officer, Dapuri Sub-Division, has now charge of—

(1) Workshop manufacture at Dapuri.

(2) Training of apprentices.

(3) M. and R. of public works department surplus machinery.

(4) Inspection and repairs to Government road rollers in the Province.

The Consulting Public Health Engineer, in addition to his normal duties, exercises direct control over—

(1) Administration of all public health (water supply and drainage) works in the Poona area.

(2) Supervision and maintenance of the Government sewage pumping station near Bahiroba nala, Poona, and the rising main line as far as distributary No. 5 in Mutha Canal.

(3) Realization of share cost of capital advanced, interest and running costs from local bodies.

(4) Alandi Water Works.

(5) Ambernath and Badlapur Water Works.

(6) Matheran Water Works.

(7) Advising on mechanical questions and carrying out inspections and tests on pumping plants all over the Province.

(8) Boring works section situated in Ahmedabad and now working in Gujerat.

7. Only one meeting of the Board was held during the year under report, viz. on the 14th September 1938. The projects which came up for the Board's approval subsequently were dealt with by circulation.

The schemes that were finally approved by the Board are tabulated in Appendix II.

8. The Consulting Public Health Engineer himself or through his assistants, inspected all the public health works carried out by local bodies in the Province. A large amount of preliminary work by way of inspection and advice has to be carried out and rough costs of schemes given before a request actually emanates from a local body for the preparation of plans and estimates of any new project. The local bodies concerned are in many cases not able to give effect at once to the advice tendered as they have always to depend upon the state of their finances at the time. The volume of work initiated in the year under report as reflected by the permissions granted for the preparation of plans and estimates, and approvals accorded to projects by the Board, is therefore small, when compared to the preliminary work actually undertaken.

9. The following among other places were visited during the year and advice offered in respect of their public health works.

Ahmedabad.

With the rapid development of this important industrial centre, it becomes increasingly difficult to cope with the demand for water, especially in the hot weather. The 24″ dia. porous pipe gallery installed some years back to collect more water tends to clog up and reduce the flow of water. The Municipality has been advised to lay another 30″ dia. collecting main and to install collecting roses fixed on to C. I. tees on the main, to increase the area of infiltration and to exploit cones of depression of the subsoil. Water supply is also supplemented by putting down several borings, but as the bore water is unfortunately brackish it is mixed with river water when delivered alternately to the public. Other means of increasing the supply have also been suggested.

The second stage of the Ahmedabad Suburban Drainage scheme has been in full swing. One of the most vexatious problems at Ahmedabad is about the disposal of sewage and the pollution of the river Sabarmati. The effluent discharging into the river after treatment by land filtration is highly charged with bacteria and to effectively stop this discharge the Municipality has been advised to work out a scheme by which all this sewage effluent will be collected at various points on the bank of the river and electric pumps installed so as to lift this effluent and discharge it on to suitable land. By doing this, not only the pollution of the river will be stopped, but valuable crops can also be grown and the soil improved. The scheme worked out should embody the following:—

(*a*) The sewage should be made to pass through a continuous flow settling tank with the object of getting rid of most of the suspended solids and thinning out the sewage.

(*b*) The sewage will then be run on to land for downward filtration and the effluent pumped on to a farm.

Ahmedabad affords ample opportunity and good soil for such a scheme to become a great success.

Kapadwanj.

Infiltration works failed to give the required purification and yield. The gallery had been choked up. It was advisable as a tentative measure to give up using the infiltration gallery and resort to direct intake from the river and to chlorinate the supply.

A detailed scheme for filtration commencing from raw water intake to the present jack well to be converted into a raw water sump and other changes involved is required to be drawn up and such a scheme will be worked out and supplied to the Municipality, if desired.

Bandra.

The complete sewerage of the town is in progress. The total length of the sewers to be laid was about 68,000 feet run, of which about 35,000 feet have already been constructed. The common

disposal works for Bandra, Khar, Santa Cruz, Danda and Kurla are expected to be in full swing during the next financial year.

Kurla.

The sanctioned drainage scheme for Kurla has been in progress The scheme is being executed by the Executive Engineer, Thana Division. About half of the town is already sewered.

The Municipality is alive to the fact that the old town should also be sewered. They are submitting a complete project for this area shortly.

Ahmednagar.

The town is known to suffer long for want of an adequate and clean water supply. It has been brought home to the Municipality that their storage for water supply is at present adequate, but that they must introduce purification works to clean the water, as the present methods are faulty and result in the water being charged with chemicals. The Muncipality has paid the necessary centage charges for preparation of the filtration scheme and for a surface drainage disposal scheme. It is expected that the new schemes will be taken up for execution by the beginning of the next year.

Belapur.

Inspected the Belapur water supply proposals made by Messrs. Satbhai & Co. Suggestions for locating infiltration works, jack well, pumping station and elevated service reservoir were given. The scheme is feasible.

Kopargaon.

Inspected the water supply schemes proposed by Messrs. Satbhai & Co. The site proposed for infiltration works was approved. The distance from infiltration works to jack well will be over 1,000 feet. The connecting trench will be very deep, say 30 feet and in loose silt deposit. Dewatering below subsoil level will be very costly. Provision in the scheme for the purpose appears to be inadequate. Amended fair project is still awaited.

Jalgaon.

Progress of laying distribution mains was held up for want of specials, pipes, etc. The Engineer having resigned, there is no suitable responsible officer under the Chief Officer to carry on the work. Suggested installation of a chloronome in place of the dose given by manual labour.

Amalner.

The town planning area has developed to a considerable extent and the earthen sullage channels were observed to be overflowing. Unless measures were taken to deal with the sullage flows, the whole area would be rendered unfit for human habitation.

Parola.

Inspected the two sources of water supply with municipal councillors:—

(*1*) Infiltration works in the bed of the Bori river.

(*2*) Infiltration wells in the bed of Bhokarbari nala.

Either scheme is estimated to cost over Rs. 2 lakhs. The Municipality has no funds. If present taxation is increased, the scheme can be financed from loan to be raised in the open market. Advised the Municipality as to the procedure they should follow if the Municipality desire that the work should be taken up by Government Agency.

Dhulia.

Perchloron solution was made by churning; faults of their working were pointed out. Installation of a chloronome was suggested. Examination of reports of analysis show that contamination took place in the service mains after the water had left the service reservoir. How to detect the source of pollution was explained to the Municipal Health Officer.

Instructions were given to the Municipal Engineer for undertaking surveys and investigations for a possible site for a farm for disposal by irrigation of the sullage water.

Nasik.

The shortage of water in Nasik during the hot weather is very acute and is having a bad effect on the prospects of the town. Both the quantity and quality of water have to be improved to cope with the present demand. The Municipality has been advised to work up proposals to include the following works :—

(1) Impounding works for storing 126 million cubic feet of water at a new site.

(2) New site for electric pumping station just above the Anandwalli weir and installation of a new pumping machinery.

(3) A rising main, 21″ diameter from the Anandwalli weir to the new site of filters.

(4) Provision of coagulation tanks and rapid filters.

(5) 21″ diameter gravitation main from filters to existing reservoirs.

Malegaon.

The Municipality has drawn up proposal for water supply to 40,000 souls at 20 gallons per head per day, basing river Mosum as the source of supply. On inspection and enquiries, it appears doubtful if the Mosum will supply all requirements of Malegaon. The Municipality is therefore advised to sink trial pits for yield tests in the bed of the river to get a correct idea of the situation. Otherwise, the Municipality would do well to base their proposals on the river Girna, which is known to be perennial.

Yeola.

Inspected three probable sources of supply :—

(1) Site near Nagarsul.

(2) near Matulsthan, and

(3) near Wadgaon.

During investigations in the past, the results were not encouraging A reliable and practicable source of supply appears to be the Khirde Sathe Tank, but that presupposes that it would be reserved exclusively for domestic supply to Yeola and drawals for irrigation would be entirely stopped.

Junnar.

The Municipality have been advised to provide a vertical spindle pump to their pumping plant to facilitate easy working, to provide a separate reservoir to store up water from another source and to work up the plans and estimates for providing a roof over the existing reservoir and also for a surface drainage to the town.

Bhimashankar.

The jointing of the masonry of the tank on the north side was bad. Instructions were given personally to the District Local Board, Engineer to have the interstices between the rubble completely filled in with 4 : 2 : 1 cement concrete using small sized shingles. The sluice valve should be removed from its present position outside the tank and refixed inside the tank.

Satara.

A detailed inspection of the aqueduct supplying Satara town was made. It was pointed out that this duct, 16 miles long, is very leaky and it is suggested to treat the same either with a compound of Asphalt or else to lay hume pipes. The purification of the water is also faulty and the colour of the water brown. Certain suggestions for improvements in aluming arrangements were made.

The town's surface drainage was also inspected and it is hoped the Municipality will prepare a complete scheme and construct surface drains in stages and improve their general sanitation.

Karad.

Instructions were given on the methods to be adopted for purification of water. If a chloronome were installed, the ways in which it was to be worked were pointed out. Ventilators may be provided to the jack well as per design supplied.

Mahableshwar.

The urgent necessity for providing good water supply and efficient drainage was impressed on the Municipality. Mahableshwar should move with the times. By the provision of

a piped water supply Mahableshwar should attract more visitors and incidentally increase municipal revenue. As an instance, it was pointed out how Matheran had quadrupled the number of visitors since the installation of good water supply.

Inspected the Elphinstone tank and the Bishop's tank. They are reported to be leaky. Advised that the tanks should be emptied after the rains and the bottoms and sides should be re-plastered with 5 per cent. of pudlo.

The Morarji Castle spring was noticed to be overflowing to the extent of about 8,000 gallons a day. Suggestions for collecting the water of this spring and pumping it to a service reservoir, its chlorination and distribution to the bazar area and certain bungalows were given.

Suggestions were made for improving the drainage, provision of septic tank, installation of incinerator, etc., were given and design supplied.

Sholapur.

The Municipality have been advised to survey a fresh source to supplement the existing water supply from the Ekruk Tank. They have been advised to provide all pure water reservoirs with a roof to prevent existing outside pollution. The present purification of the water was found to be faulty and detailed advice was given to improve the quality of water.

Pandharpur.

The Municipality propose to remodel the distribution system. The project, estimated to cost Rs. 3 lakhs, approximately has been approved by the Board of Public Health Works. Funds are required to be raised in the open market with Government approval and the agency of execution decided.

It was necessary that ventilators should be provided to the jack well, so that a fresh supply of pure air may be discharged into the bottom of the jack well through one pipe and the foul air expelled through the other. This would avoid accidents to workmen. Type design for this sort of ventilator has been supplied to the Executive Engineer, Sholapur Division.

Belgaum.

The old 1918 scheme is on too vast a scale and is unlikely of achievement financially. It is possible to devise a smaller scheme amounting to less than Rs. 10 lakhs, and this would appeal to the Municipality and Government sanction to floating a loan obtained and the work executed.

Bijapur.

The Bhutnal storage reservoir was inspected. The raising of the waste weir is now under construction and is expected to be completed in a few weeks. The slow sand filtration was found to be faulty and outgrown its capacity. The Municipality have been advised to take out all sand and convert these filters into settling tanks for the use of alum treatment. The present water supply to the town is coloured and the dose of chlorine high. Detailed instructions were given to improve the quality of water.

Dharwar.

Water supply to this town is most inadequate. In years of late or deficient rains, there is no water supply for 3 to 12 weeks at a stretch and people have to obtain supplies from wells. The main requirement of Dharwar is to find another catchment area and a supplementary pumping plant so as to augment the existing supply.

Hubli.

The rate of water supply per head in Hubli is very meagre, viz. 9 gallons per head per day. There is ample water in the Unkal tank and it is possible to increase the rate of water supply to 30 gallons per head per day. This would involve re-designing the diameters of most of the supply pipes. Detailed instructions as to chlorination and alum treatment were given.

The old 1894 machinery may be dismantled and a new engine installed. If the electric company offers a reasonable rate, the electric pumps, which are cheapest in capital cost, should be considered.

Panvel.

The present water supply is only about 70,000 gallons per day, which supplies about 7·25 gallons per head for the existing population of 9,000 souls. The Municipality has formulated proposals for increasing the flow of water into the existing aqueduct by lengthening it and tapping more spring water. It is also proposed to increase the spring water level by constructing a masonry weir to be built in the river just above the present aqueduct. The Municipality has been asked to work up a comprehensive scheme on given lines.

Matheran.

The maintenance and repairs of this water works are under Government agency. Improvements in the method of chlorination by the addition of ammonium sulphate, which helps to neutralise the taste of chlorine were carried out.

Incinerator may be installed to burn the dry refuse.

Among other places inspected are :—

Karad,
Vita,
Nipani,
Saundatti Yellamma,
Mahad,
Rajapur,
Khed (Ratnagiri),
Karwar,
Sangamner,
Sirur,

etc., etc. Suitable advice to improve the existing water supply and drainage arrangements or to find suitable sources of supply was given to the officers concerned.

10. Fees are now levied by the Consulting Public Health Engineer—*vide* Appendix III. The total amount of such fees recovered during the year and credited to Government amounted to Rs. 19,105-4-0.

11. *Conclusion.*—The mechanical plant at most of the water works that have been inspected has on the whole not been quite efficient, but those plants run by Government agency are usually well maintained. Most distribution systems leave much to be desired. In many towns records have not been correctly maintained and in some conditions are chaotic. Extensions are usually carried out haphazardly and branch mains overloaded with numerous connections instead of duplicate mains being laid. The distribution systems in most of the large towns are out of date and require re-organization, e.g., Hubli. Waste has properly to be tackled and reduced, the relief would only be temporary and old conditions would resume after the expiration of a few years.

R. A. COLLETT,
Secretary, Board of Public Health Works.

APPENDIX I.

Personnel of the Board of Public Health Works, Province of Bombay, as it stood on 31st March 1939.

President.

The Commissioner, Central Division.	Mr. J. W. Smyth, C.S.I., C.I.E., I.C.S.

Official Members.

The Secretary to Government, General Department.	Mr. V. S. Bhide, B.A., LL.B. (Cantab.), Bar-at-law, I.C.S.
The Chief Engineer and Secretary to Government, P. W. D.	Mr. C. E. Aitken, B.Sc. (Edin.), I.S.E.
The Director of Public Health for the Government of Bombay.	Lt.-Col. A. Y. Dabholkar, M.C., M.B.B.S., B.Sc. (Bom.), D.P.H., D.T.M. & H. (Lond.), I.M.S.
The Consulting Surveyor to Government.	Mr. G. B. Soparkar, L.C.E., F.S.I., A.M.T.P. Inst. (Lond.).

Non-Official Members.

Mr. Pestanshah N. Vakil.

Mr. B. B. Chakranarayan, M.L.A.

Official Member and Secretary.

Mr. R. A. Collett, M.Inst.C.E., M.R.San.I., M.Inst.W.E., Consulting Public Health Engineer to Government.

R. A. COLLETT,

Secretary, Board of Public Health Works.

APPENDIX II.

PUBLIC HEALTH ENGINEERING SCHEMES APPROVED BY THE BOARD OF PUBLIC HEALTH WORKS DURING THE YEAR 1938-39.

The following projects were approved and execution of the same authorized by the agency noted against each :—

Name of Project.	Estimated cost.	Agency of Execution.
	Rs.	
1. *Poona City Water Supply.*—Water supply scheme in the high level area in Town Planning Scheme No. 1.	1,00,000	Poona City Municipality.
2. *Dhulia Drainage.*—Laying of street drains in district Nos. 10 to 13.	15,858	Dhulia Municipality.
3. Surat Drainage	56,14,400	Surat Municipality.
4. Deviation Works in respect of the Joint treatment and disposal works for Bandra and Kurla.	2,27,500	Bandra Municipality.
5. Revised plans and estimates for Kurla drainage.	5,81,830	Executive Engineer, Thana Division.
6. *Pandharpur Water Supply*—Improvements to distribution system.	3,30,183	Not yet decided.
7. Pandharpur Drainage ...	3,23,250	Do.
8. Construction of a feeder channel from the Padugonda Tank to the Halbhavi Tank at Nargund.	9,212	Do.

R. A. COLLETT,

Secretary, Board of Public Health Works.

APPENDIX III.

SCALE OF FEES IN RESPECT OF PREPARATION, SCRUTINY, EXECUTION AND INSPECTION OF PUBLIC HEALTH SCHEMES CARRIED OUT BY GOVERNMENT AGENCY.

(1) *For preliminary investigation and report.*—For a local body—no charge. For an outside body—the daily pay of theofficer making the investigation and the staff which accompanies him from the date of leaving headquarters till the date of return *plus* 50 per cent. for a period not exceeding seven days.

For periods in excess of seven days, the charge will be as above for the first seven days, and thereafter the daily pay of the officer making the investigation and staff which accompanies him *plus* 100 per cent.

In all cases the travelling and halting allowances of the Consulting Public Health Engineer and his staff will be paid by the local or outside body concerned.

(2) *For carrying out detailed surveys in connection with a project.*—The estimated cost of the survey, including cost of establishment to be engaged, shall be recovered.

(3) *For preparation of a project complete with all necessary drawings and estimates.*—2½ per cent. of the estimated cost less the amounts paid under (1) and (2) above.

(4) *For scrutiny by the Consulting Public Health Engineer of a project prepared for a local or outside body by an agency other than the Public Works Department.*—1¼ per cent. of the estimated cost of the project.

(5) *Inspection, by the Consulting Public Health Engineer to Government, of Public Health Works under construction, if constructed by an agency other than the Public Works Department.*—1¼ per cent. of the actual works outlay exclusive of land compensation of the project.

If the Consulting Public Health Engineer is asked to act continuously as consultant for any work and has accordingly to visit that work from time to time as it progresses, the total charge will be 1¼ per cent. of the estimated cost. If at the request of the local body he pays an occasional visit only the charge will be Rs. 100 *plus* the actual expenses of journey *plus* usual travelling allowances, etc. ; but no charge is made for visits made by the Consulting Public Health Engineer on his own initiative or for advice offered on such visits or for visits by the Engineers of local bodies to him at his office to consult him about any particular point that arises.

(6) *Construction of works by the Public Works Department on behalf of a local body.*—Establishment and tools and plant charges at 15 per cent. of the estimated cost of the project inclusive of 2½ per cent. for the preparation of plans and estimates.

R. A. COLLETT,

Secretary,
Board of Public Health Works,
Province of Bombay.

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